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SURGICAL CASES, FROM THE RECORDS OF THE CITY HOSPITAL, BOSTON.

REPORTED BY DAVID W. CHEEVER, M.D., ONE OF THE VISITING SURGEONS.

[Communicated for the Boston Medical and Surgical Journal.]

Second Paper.—FIVE CASES OF PARTIAL AMPUTATION OF THE FOOT.

CASE I.—*Injury of the Foot; Lisfranc's Operation followed by Amputation.*—(Under the care of Dr. Cheever.)—Michael L., on the 18th of April, 1865, had a sheet of boiler-iron fall on the dorsum of the foot, about an inch behind the base of the toes. The skin was lacerated and bruised; the first and second toes fractured, and the others badly contused. What, at first sight, appeared a comparatively trivial injury, in two days had run into erysipelas, and in four into gangrene of two toes, and sloughing across the line of the wound on the dorsum of the foot. He was treated at this period with egg-nogg, beef-tea, and tinctura ferri muriatis in drachm doses; the foot kept moderately warm, and incisions made into the inflamed parts. The patient was of a peculiarly nervous, irritable and timorous organization, and evinced throughout much repugnance to any operative measures. A line of demarcation having defined the great and second toes, and the sloughing across the base of the others being superficial, on the 26th, a week after the injury, these two toes, and the heads of the corresponding metatarsal bones, were removed. In a few days it became evident that necrosis was taking place in the shafts of the amputated metatarsal bones, and during the succeeding four weeks the patient had several attacks of erysipelatous inflammation, and became considerably reduced, although during part of this time he was able to sit up. Always opposed to any explorations, he was finally induced, on June 11th, to have something more done. Being very desirous to save all of the foot possible, I confined myself to removing three fourths of an inch of dead bone from the first metatarsal, and some scales and spiculæ from the adjacent soft parts. It was evident that some more radical measure would have to be employed eventually, but it was thought proper to

VOL. LXXIII.—No. 10

defer it until the patient should consider it and consent. In ten days, having meanwhile suffered more sloughing and constitutional irritation, he consented to *Lisfranc's operation*. This I did on June 21st, and found the articular surfaces and flap looking quite well. There was only moderate hæmorrhage, and but for the known irritability of the patient, it seemed to promise a good result. The sutures were removed in four days, and the ligatures came away in six. Union was moderately good over the top of the flap, but the pulse kept up high, and there was much irritation, which culminated on the 29th in another patch of erysipelas on the ankle and up the leg. The two depending portions of the incision began to discharge a dirty pus; the constitutional irritation increased day by day. Restless, painful nights were succeeded by despondent days. The complexion became straw-colored; the stomach irritable, alternating with diarrhoea.

July 5th.—An abscess was opened above the inner malleolus. Things went on from bad to worse, a probe passing through the stump from one side to the other; new abscesses collecting and burrowing, with a thin, sanious pus, and dead bone could be felt in various directions. After the strongest representations of his danger to himself and friends, the patient finally consented to amputation. It was done on July 23d, a month after *Lisfranc's operation*, the leg being removed midway between the knee and ankle. Oval skin flaps were made in front and behind, and a circular section of the soft parts where the bones were sawed. These flaps came together without the slightest tension, and the ends of both bones were well obliqued and rounded with the saw and forceps. On examination of the stump, it was found thoroughly diseased in every articulation. The three cuneiform bones were spongy wedges of caries; the cuboid and scaphoid were nearly as bad; the articulations of the astragalus and *os calcis* were likewise affected, and offensive pus was found in the ankle-joint, and even in the inferior articulation of the tibia and fibula. Commencing at *Lisfranc's joint*, every articular surface was successively riddled by disease. Subsequently to the amputation he went on well, notwithstanding his pain and irritability, and a threatened protrusion of the tibia through the anterior flap, which danger was averted by slinging the stump on a tin splint. He was discharged, well, in four weeks, and it is worthy of remark that the erysipelas, to which he was so subject, ceased as soon as the cause of irritation, the carious tarsus, was removed, showing that his recurring attacks were not due to any bad hygienic influences in the hospital, although he was himself a standing focus of contagion to others.

CASE II.—*Crush of Foot; Chopart's Operation; Subsequent Amputation.*—(Under the care of Dr. Cheever.)—June 24th, 1865. Thos. O'N., *æt.* 23, laborer; a moderate drinker; fair health. A gravel-car ran over metatarsus and phalanges of left foot, producing

01.04.—HIZZAL 207

laceration of inner side of foot and plantar aspect of toes, and fracturing two toes. Next day, first and second toes cold and blue; constitutional state irritable. Following day, three toes cold; great toe black and vesicated.

June 27th.—Line of demarcation forming on dorsum, two inches above base of toes. Does not complain of much pain. Blush of erythema and red lines extending above ankle. Tarsus swollen and cedematous, but normal on plantar aspect. Very timid, irritable and depressed.

28th.—On consultation, *Chopart's operation* was advised, as affording a fair chance of success, and being as low as it is safe to go. The operation found the articular surfaces healthy, but the flap looked poorly, the muscle being dark and congested, and the sheaths of the flexor tendons a little discolored with a yellow, semi-purulent look. These portions were dissected out. The tendo-Achillis was divided subcutaneously, the flap brought up firmly by sutures and broad straps.

July 3d.—The ligatures had all come away; the flap was hitched on by granulations; he looks pretty promising, but the pulse has ranged from 100 to 136 for the week past. Stimulants and food freely given.

4th.—A little secondary hæmorrhage. Spasmodic retention of urine. For the next fortnight a good deal of pain. No firm union. A little occasional hæmorrhage. Generally running down.

22d.—Two counter openings for pus, which had burrowed up the leg, made beside either malleolus; a good deal of pus. Pulse keeps very high. Much suffering. Failing.

July 26th, one month after the primary operation, a secondary amputation was performed—his consent having finally been obtained. Amputated at middle of leg by oval skin flaps. On examining tarsus, very extensive disease was found, extending, as in the other case, through all the articular surfaces, to the ankle-joint.

Section of the tendo-Achillis found it firmly united by a granular material—strong and slightly elastic. One month since section.

During the following week, patient appeared relieved of a load. Some sloughing of flaps; a little necrosis coming on—but, on the whole, doing well, up to this date, Aug. 23d, 1865.

CASE III.—*Injury of Foot, followed by Gangrene; Lisfranc's Operation; Subsequent Amputation; Death.*—(Under the care of Dr. Stedman.)—May 25th, 1865. George F., æt. 23, a native of Gibraltar, and a soldier. Six days ago had the great toe run over by a horse-car. Has now a dark, gangrenous-looking slough extending up nearly to the tarso-metatarsal articulation. General health fair.

May 28th.—Not so well. No appetite. Ordered ale.

June 2d.—Foot red and painful. R. Tinct. ferri mur., gtt. xxx., secundis horis.

7th.—Slough extending. Operation deferred until limits are more defined.

14th.—Lisfranc's operation performed; but little hæmorrhage.

16th.—Doing well. Not much constitutional disturbance.

19th.—A little sloughing on inner side of flap. Eight ounces of wine daily.

22d.—Diarrhœa.

25th.—Foot looking better under a chlorinated poaltice.

28th, 29th and 30th.—Foot very much inflamed and painful. Aspect as of extensive disease of tarsus. Constitutionally failing. Diarrhœa at intervals. Hectic.

July 1st.—Leg amputated three inches above ankle by two oval flaps; parts look rather congested; but little blood lost.

6th.—Wound looks dark and sloughy. Free stimulation.

8th.—Very weak; no appetite; tongue dark; pulse 120; delirium; diarrhœa. Large slough separating.

12th.—Seems better since slough came away. Bones denuded for two inches; edges of wound granulating. Beef-tea, porter and rum.

15th.—Diarrhœa again.

17th.—Delirium, very prostrate.

23d.—At a consultation it was decided that he was too feeble to bear any removal of necrosed ends of bones.

30th.—Died—one month after the amputation, six weeks after the tarso-metatarsal amputation, two months since the injury was received.

CASE IV.—*Inflamed Bunion of Great Toe, followed by Disease of Metatarsal Bones; Lisfranc's Operation; Good Recovery.*—(Under the care of Dr. Stedman.)—March 22d, 1865. E. W. W., æt. 35, entered hospital for disease of metatarso-phalangeal joint of great toe—an inflamed bunion having suppurated, opening joint, and followed by necrosis. Great toe and head of metatarsal bone amputated to-day.

25th.—Wound healthy, but suppurating. Stimulants.

April 1st.—An abscess evacuated on instep.

11th.—Abscess formed and opened at junction of second and third toes.

22d.—Abscess formed in sole.

28th.—Dead bone found at second toe.

May 3d.—Foot examined under ether. Dead bone found as high as first row of tarsal bones, and involving several metatarsals. Wife would not consent to operation.

10th.—Lisfranc's operation done by Dr. Stedman.

12th.—Wound looking well.

14th.—Good appetite. But little pain.

16th.—Foot strapped. But little discharge.

22d.—Nearly healed.

31st.—On crutches.

June 6th.—Discharged well, four weeks after Lisfranc's operation. Has since been seen with a boot on, walking quite well.

CASE V.—*Gun-shot Necrosis of Os Calcis and Astragalus; Operation; Recovery.*—(Under the care of Dr. Cheever.)—July 28th, 1865. Daniel G., æt. 21, was wounded in the heel by a Minié ball, before Petersburg, March 31st, 1865, four months ago. A piece of shattered bone worked out in two weeks. Has had four or five pieces removed since, without the use of the knife. Abscess formed and opened twice. Now, a sinus below insertion of tendo-Achillis, where dead bone can be felt. Hot and feverish; foot swollen and painful.

July 29th.—Patient very feverish this morning. Foot and ankle more swollen, red and glazed. Constitutional disturbance great. Aspect of foot so threatening as to suggest immediate interference, in order to save the member. A rectangular flap was made over back of heel. A large carious cavity was found in posterior part of os calcis. Much dead bone was gouged out. After this had been satisfactorily accomplished, it was found, to our regret, that a probe passed freely along the outer side of foot, to a point just below the outer malleolus. An incision was made the whole length of the director; pus escaped, and more dead bone was found. This was in the posterior and external calcaneo-astragaloid articulation, not communicating with the malleolar (fibular) joint. A segment, one fourth of an inch in diameter, was gouged out of this cavity, embracing parts of both bones. Everything now appeared sound, except a superficial sinus running down into the sole. Here a free counter-opening was made. The wound was partially closed with silver sutures, and cold water applied. Beef-tea and opiates ordered.

30th.—Patient looks better. Less fever; appetite improving; less heat and swelling of foot.

August 5th.—Has improved very fast. Wound filling up with granulations; only one small slough remains; no great suppuration.

19th to 22d.—Abscess formed and was discharged on outer side of foot.

25th.—About four weeks since operation. Sits up, and doing extremely well. Wounds fast closing. No bone to be felt. Foot getting natural in size. No fever. Appetite good. Every prospect of an excellent foot, where, one month ago, extensive caries of tarsus and ultimate amputation threatened.

In reviewing these cases, we are struck by the fact, that the last one, apparently as unpromising as any of them, made an immediate and excellent recovery, while only one of the remaining four escaped subsequent amputation; and we are led to ask whether some other reason than chance or coincidence may not be found to account for the greater success of partial removal of bones of the tarsus by

excision or gouging, than by the amputations through or below the tarsus.

Taught by the experience of four years' warfare, our army surgeons, we are told, prefer amputation above the ankle to Lisfranc's, Chopart's, or Syme's amputation of portions of the foot. The exigencies of crowded hospitals, of transportation, of depressing causes and epidemic influences have wisely led them to discontinue operations whose chances of success are so largely governed by all these influences. In civil surgery such influences do not, or should not exist; but we think other anatomical and pathological reasons can be found which largely influence the results of partial amputations of the foot.

It is not a favorite operation in this country to amputate at the articulation of the radius with the scaphoid and semi-lunar bones (commonly called amputation through the wrist-joint); but would not that surgeon be deemed more than bold who should amputate between the two rows of carpal bones, or, were it feasible, at the junction of the carpus and metacarpus; and yet the same thing is advised and done on the foot, although the lower extremity has notoriously far less vitality than the upper. Setting aside, first of all, the need and desirableness of saving all of the foot possible to walk upon, where as an inch more or less at the wrist is of little consequence, and also the smaller size of the carpal bones, which may render them more vulnerable to caries, we yet find at last certain identical conditions peculiar to each, which militate against partial amputation. These conditions are the *arrangement and inter-communication of the synovial surfaces*. Four such surfaces are more commonly described in the foot, although six properly exist. The *first*, small and distinct, at the posterior articulation of the astragalus and os calcis. The *second*, larger, at the anterior articulation of the astragalus and os calcis, and of the astragalus and scaphoid. The *third*, distinct, between the cuboid and os calcis. The *fourth*, the great synovial membrane, running through seven articulations, and uniting the scaphoid, the three cuneiform and the second and third metatarsal bones. A more or less distinct synovial cavity unites the fourth and fifth metatarsals to the cuboid; and a small, separate cavity, analogous to that of the metacarpal bone of the thumb and trapezium, lies between the metatarsal bone of the great toe and the internal cuneiform.

Now Lisfranc's operation, or amputation at the junction of the tarsus and metatarsus, opens the synovial surface of every articulation of the tarsus, as far back as Chopart's joint, in front of the astragalus and os calcis. In other words, the three cuneiform, the scaphoid and the cuboid bones are all laid open to the access of pus, of decomposing gases and of the air, provided that primary union does not take place. What follows? The strong survive, the weak succumb. The vigorous constitution, not debilitated by bad habits, and the subject of Lisfranc's amputation, if under good-hygienic in-

sinuses, with a well-shaped flap, firmly adjusted, successfully goes through with what we may here truly call the *great task* of healing. Four articular cartilages, and one—the cuboid—a large one, must heal by first intention, without ulceration; and four extensive synovial surfaces must be promptly sealed by lymph. If all this be accomplished, we get a most useful foot. But, in the feeble subject, or the badly nursed, we have, first, probably, almost immediate union of the upper surface of the wound, which may deceive us into hopes of a good result; but very soon sinuses are formed in the two corners of the plantar flap, whence pus, at first laudable, and soon foul, sanious and oily, indicates too surely what is concealed within. The probe detects denuded bone on the extremities of the cuboid or cuneiforms, or all of them. And the mischief does not stop here. The whole tarsus swells and reddens; the skin grows puffy, shining and oedematous; pus burrows superficially towards the heel, and behind either malleolus; hectic, prostration and erysipelas ensue. The evil creeps on from one synovial surface to the next, until, pent up in the interior of the tarsus, the caries overleaps the septa which divide these articulations from those of the astragalus and os calcis. By this time, or long before, the patient is on the point of succumbing, unless amputation be immediately performed. We cannot better typify these results than by repeating from the record of the first case in this paper—"Constitutional irritation increased day by day. Restless, painful nights were succeeded by despondent days. The complexion became straw-colored; the stomach irritable, alternating with diarrhoea. A probe passed through and through the stump; new abscesses collected and burrowed, with thin, sanious pus, and dead bone could be felt in many directions. On examination of the stump after amputation, it was found thoroughly diseased in every articulation. The three cuneiform bones were spongy wedges of caries; the scaphoid and cuboid were nearly as bad. The articulations of the astragalus and os calcis were likewise affected, and offensive pus was found in the ankle-joint, and even in the inferior articulation of the tibia and fibula."

Amputation through the tarsus, commonly called Chopart's operation, is done at the articulation of the scaphoid and astragalus, on the inner side, and the cuboid and os calcis on the outer. The latter is a separate synovial surface; but the former communicates with the anterior calcaneo-astragaloid articulation. To a limited extent it is, therefore, liable to the same objections as Lisfranc's operation, since it opens the way for pus and caries between the astragalus and os calcis, and ultimately to the ankle-joint. While running an equal risk, the stump which it leaves is not so desirable as that of Lisfranc's, since it is so short as to be tilted downwards by the action of the sural muscles, unless the tendo-Achillis be divided.

It is not part of our purpose to speak of Syme's operation, amputation at the tibio-tarsal articulation, or Pirogoff's modification of it

by retaining a portion of the os calcis, in this paper. For this amputation through the ankle joint opens only one articulation, and the articular ends of the tibia and fibula are also sawn off. The only danger attending it, over ordinary amputations, depends upon the vitality of the flap; and the only question of expediency is as to the usefulness of the stump.

The stump left by Lisfranc's operation is an excellent one for practical use; but in any partial amputation of the foot above the tarso-metatarsal line, it is doubtful whether so good a stump can be obtained, or so good an artificial foot adjusted, as after an ordinary amputation of the leg. For it is to practical results entirely that we should look after the unavoidable mutilation of an amputation, and to them alone.

What reason can now be assigned for the prompt success of the fifth case reported? Here was caries of four months' duration, which had travelled to the posterior articulation of the astragalus and os calcis, pus burrowing into the sole, and a condition of constitutional disturbance threatening amputation. It seems to us that the result was due—first, to the prompt and very free incisions which gave exit to every source of irritation; second, to the fact that the *posterior calcaneo-astragaloid articulation is a single synovial surface*. Fortunately the disease had penetrated no farther, and although both astragalus and os calcis were freely gouged here, no other articulations were opened.

It has been noticed by surgical authors that the prognosis in idiopathic caries of the tarsus varies with the seat of the disease, and the chances of benefit by interference, as well; caries of the cuboid, astragalus, or os calcis, being much more amenable to treatment by excision and gouging, than disease of the scaphoid and cuneiform bones, where larger synovial surfaces are necessarily involved.

By a parity of reasoning, the same rules should apply to partial amputations of the foot—though, so far as we are aware, they have not been definitely laid down. For although instances undoubtedly occur in which entire bones, even the astragalus or os calcis, are removed by excision for disease with success, we must still adhere to general rules, and not to brilliant exceptions dependent on peculiar vigor of the patient. Certainly, the same reasons which influence us against opening other joints should hold good in a locality so prone to disease as the tarsus.

It remains to be seen what modifications of these operations have been proposed, or can be suggested to lessen their risks.

In the year 1799, antecedent to Lisfranc, Mr. Hey first did a partial amputation of the foot, which has borne his name in England since that time. This amputation consisted in disarticulating the four lesser metatarsal bones from the tarsus, and sawing through the internal cuneiform. Except for its greater facility of performance, over what has been regarded as an anatomical *tour de maitre* in the

operating theatre, this operation is in nowise better than the disarticulation of the tarsus and metatarsus proposed by Lisfranc; for the great synovial cavity communicates with the second and third metatarsals, which Hey opens, and not with the first metatarsal, which he avoids by the saw.

On the other hand, we may safely open the joint of the first metatarsal and internal cuneiform with the knife, and saw across the other four metatarsal bones. Thus we avoid synovial cavities.

On the whole, the best amputation of the metatarsus is probably to cut through the skin only, over Lisfranc's joint, and to saw all five metatarsals below the articulation, covering them with the plantar flap, as in the usual way; and the cases calling for partial amputation in this vicinity must be few, in which it would not be possible to get sound tissue and skin enough to cover the one as well as the other amputation.

Of amputations through the tarsus, if we either do Chopart's operation, or even saw the head of the astragalus, we open the anterior calcaneo-astragaloid articulation. We may more safely disarticulate the cuboid from the os calcis, and the scaphoid from the cuneiforms, leaving the scaphoid in, thus saving the anterior calcaneo-astragaloid articulation, which communicates with the astragalo-scaphoid joint; or, if it be feasible, we may saw across both scaphoid and cuboid, without opening other articulations.

Lastly, what seems most feasible, disarticulate at the junction of the scaphoid and cuneiforms, and saw across the cuboid on the same line; making not more than one third of an inch difference in the length of the stump from Chopart's disarticulation.

Until further experience shall have changed our conclusions, we are inclined to believe, therefore:—*First*, That for any injury about the foot requiring amputation of the toes and metatarsal bones, it is safest to amputate by sawing, half an inch below Lisfranc's joint.

Second, That sawing through the tarsus or the cuboid, is preferable to Chopart's amputation.

Third, That for safety and practical results, amputation through the ankle joint by Syme's method is preferable to any amputation through the tarsus.

Fourth, That for good use in after life, a stump above the ankle is probably better than any made below, unless it be anterior to Lisfranc's articulation.*

We should certainly bear in mind the low vitality of the inferior extremity as compared with the superior, and the rough usage which an amputated foot has got to endure, before we apply conservative surgery too rigidly to this portion of the body.

* Since writing the above, we have received descriptions and cases of apparatus for Syme's amputation, from Dr. Hudson, of New York, which he claims to give excellent walking power—better even than an artificial limb attached above the ankle.

RESECTION OF THE HUMERUS.

BY WILLIAM B. REYNOLDS, M.D., LATE ARMY SURGEON.

[Communicated for the Boston Medical and Surgical Journal.]

CORPORAL KIRK, of 1st Maine Heavy Artillery, received a gunshot wound in the left arm, Nov. 4th, while doing picket duty in front of Petersburg, and was taken immediately to the Field Hospital. He had not lost a great amount of blood, for the ball in its passage left the brachial artery uninjured. He was suffering severely, however, and complained greatly of thirst, yet he was in good spirits. He was considerably depressed, shivering, and had a rapid and feeble pulse. He possessed strong constitutional powers, and had a fine physique, and soon rallied under the use of stimulants freely administered. In an hour, reaction was so well established that he was in a good condition for examination and operation.

After chloroform was administered, a careful examination revealed extensive comminution of the humerus, as high up as the surgical neck, and the spiculæ of bone were driven into the surrounding soft parts so extensively, and the muscular structure was so bruised, that it felt and appeared like a pulpified mass and was completely disorganized. The arm then being quiet and removal any further to the rear being unnecessary, it was judged advisable to resort to conservative surgery, and resection of the bone was determined upon instead of amputation, either at the surgical neck or at the joint, should dissection show the joint to be unopened. I at once made an incision in a line of the axis of the bone, down to the bone and sufficiently free to completely expose the lacerated parts and comminuted bone. The careful separation of the periosteum from the bone up to the highest point of fracture, showed that the joint was not opened, and the tuberosities and anatomical neck were not implicated. This proved the correctness of the diagnosis. The soft parts being then carefully guarded by the fingers of the assistants and the necessary instruments, the bone was then divided with the chain saw. I then separated the periosteum from the fragments and the other fractured end of the bone, and sawed it also with the chain saw at the lowest point of fracture, and taking plenty of time, carefully removed every particle of bone, of which there was almost an endless number.

The patient was shot at such short range that the ball had lost none of its velocity, and a portion of the bone was coarsely powdered, rendering the operation very tedious, and considerable time was consumed in removing the minute particles. Portions of the pulpified muscles were cut away, and the wound thoroughly cleaned. Several large nerves were exposed, as was also the brachial artery, but fortunately they were uninjured. Several sutures were introduced, and the wound was dressed with adhesive plaster and water dressing applied. The arm was then laid in splints, a broad one

beneath, and a roller sufficiently tight to keep the splints in their proper position completed the dressing.

He readily rallied from the influence of the chloroform and was carried to bed and half a grain of morphine at once given, as he was suffering severe pain after the anæsthetic effects of the chloroform had passed away. Owing to the excessively comminuted condition of the bone, it was impossible to state precisely the amount of bone removed, but it was judged to be two and a half inches. No attempt was made to approximate the ends of the bone at this dressing, judging it best to wait until the natural contraction of the muscles should be restored after the effects of the chloroform had passed away and the patient had rallied from the depressing effects of the injury and the operation.

Nov. 5th.—He rested well last night, and is cheerful this morning. Reaction is severe, and the arm quite painful. Cold water to be frequently applied and the dressing to be loosened. Complaints of pain in the head and back. Pulse 100, full, and the tongue is coated with a white fur. R. Pil. cath. comp., No. iv. at once. The pills operated three or four times, sensibly abating the febrile symptoms and relieving the pains in the head and back. R. Pulv. ip. et op., gr. xii. in the evening.

Nov. 6th.—Rested tolerably well last night, and is perfectly free from pain. Has some appetite. Low diet and perfect rest enjoined. Suppuration has commenced, and the wound looks well. Continue dressings, and Dover's powder at night.

From this time until the 15th, there was no material change in the dressings and very little medication was necessary. The arm was kept in splints, and at this time the ends of the bones were nearly approximated and there was very little pain, but the suppuration was profuse. Appetite very good, with a liberal diet.

From the 15th to Dec. 1st, the case progressed very favorably. The profuse suppuration, however, sensibly reduced him, and a free diet, after the second week, was ordered, and stimulants also after the febrile reaction had abated. By these means his strength was kept up, and he was in excellent spirits during the whole of the time he was in hospital.

At the end of four weeks, our division was ordered to be in readiness to move, and he, with the other sick and wounded, was sent to City Point, and I heard nothing from him for a month. At the end of four weeks he wrote to his regimental surgeon, Dr. Elkins, that he was quite well and the wound nearly healed; that there was very little suppuration; that the arm then was vastly better than none, and that he could carry it unassisted out from the body at an angle of forty-five degrees, and thought that eventually he would be able to raise it to a level with, and perhaps carry the hand to the head. He wrote again some time subsequently, and stated that his arm was constantly improving, and expressed great gratitude that it was not

sacrificed. I am unable to trace the case any further, but have already traced it sufficiently far to convince me that, instead of having a pendent and worthless member, he will have, in good time, a useful limb.

During the rush of a campaign, so vigorously pushed as was Gen. Grant's, inaugurated at the Wilderness and ending in front of Petersburg, when the hospitals were so crowded, and many things operating to paralyze the best efforts of the surgeons and confuse the best laid plans, it is not surprising that some limbs are sacrificed that could, under more favorable circumstances, have been saved. Ambulance transportation, the heat and dust, improper diet on the route, and the want of such attention from nurses as severe cases require, combined with the depressing effects of the injury, and the reaction not being controlled by the proper remedies and attention, all these together have destroyed thousands of limbs and mutilated a long catalogue of American heroes; and I am satisfied that in this case, of which I have given an imperfect outline, if the patient had been compelled to ride in an ambulance many miles, as very many did early in the campaign, and the operation had been deferred two or three days, he would have lost the arm at the shoulder-joint, if not his life.

Reports of Medical Societies.

EXTRACTS FROM THE RECORDS OF THE PROVIDENCE MEDICAL ASSOCIATION.
BY W. H. TRAVER, M.D., SECRETARY.

DR. TRAVER reported the following case of *hernia cerebri*. June 2d, 1863, he was called to see John McN., aged four years, who had fallen from a first-story window, striking his head upon a sharp stone, fracturing the upper and left part of the *os frontis*, rupturing the membranes and wounding the tissues of the brain. Pieces of the cranium, the size of a ten-cent piece, were taken out. A triangular piece of window-glass, about half an inch in length, was found embedded in the brain. The opening in the scalp was partially closed by means of the interrupted suture and adhesive straps. The sutures came away in due time; the strap becoming disarranged, a portion of the brain, about three fourths of an inch in diameter, protruded and extended seven eighths of an inch above the surface of the cranium. The hernia, or protruding brain, was excised, and a piece of patent lint saturated with lime water was placed over the orifice, and in immediate contact with the brain. Over this a graduated compress and bandage. The wound was dressed daily, and the lint kept saturated with the lime-water. The slightly astringent properties of the lime-water produced a contraction of the brain in the aperture of the cranium, and, together with the compress, caused it to recede below the surface. The wound in the scalp healed kindly. Little or no pulsation can now be felt.

Dr. COLLINS reported the following cases :—

A Glass Pessary remaining in the Vagina fifteen years.—Dr. Collins exhibited a glass pessary which had been worn without removal for fifteen years.

It was introduced by Dr. L. L. Miller of this city, in June, 1850, when the patient was upwards of sixty-five years old, and was removed by Dr. C. in July, 1865, when she was upwards of eighty.

The pessary was the usual circular perforated glass disc, two inches and three quarters across. Its presence, at the time of its removal, was producing much irritation, giving rise to a copious offensive discharge, with much disturbance of the bladder. The removal was attended with much difficulty and considerable suffering, owing to the atrophy of the parts from age.

It was effected after bringing the instrument to the outlet, by passing the finger into the rectum and expelling it by considerable force from above. The effect upon the surface of the glass, from long and continued subjection to the action of the secretions, was remarkable. The surface of the glass was irregularly covered by a whitish, chalky-looking substance, very difficult to remove. The action of strong nitric acid upon it caused effervescence, and effected its removal after washing and rubbing. After the removal of the deposit, the greater portion of the surface of the glass was found roughened, and in some places quite deeply corroded. What the peculiar product is, which is formed in this part of the female system, having the power of corroding glass, he leaves for the chemists to determine. The facts in the case were very apparent.

Absence of the Vagina.—This patient was a strong, well-formed Irish domestic, 22 years old, who presented herself to Dr. C. for advice, for the reason that her menses had never appeared. Her health had not suffered further than that she had had, once a month, headache and some pain in the back and legs, which generally disappeared in a few days. Her age and general healthy appearance suggested the possibility of some defect in the organs themselves, and before prescribing for the case, an examination was deemed important. This revealed the fact of an entire absence of the vagina.

The external organs were rather small.

The bladder opened naturally. A small sulcus below the meatus marked the locality of the os externum, but beyond there was nothing to indicate any attempt at the formation of a canal. With a catheter introduced into the bladder, and the finger into the rectum, nothing could be felt except the rectal and vesical walls. It was thought that the womb could be felt per rectum, but there was no accumulation of menstrual fluid either in the womb, or in any pouch below it. The sexual inclinations were normal.

The case was one which did not appear to admit of any relief.

Fibrous Tumor weighing half a pound removed from the breast of a girl of fourteen.

The patient was a young colored girl of fourteen, of small stature, but fully developed. The tumor had existed for about three years, and had grown rapidly for some time previous to removal. It was situated above the left nipple, lying partially imbedded in the gland. It gave a distorted appearance to the chest, and a very uncomfortable sense of weight and dragging. It was very movable, and surrounded

by condensed cellular tissue. It was removed by two transverse elliptical incisions. The wound healed by the first intention throughout.

Rupture of the Stomach by a Fall.—This extremely rare form of injury occurred in a perfectly healthy boy, thirteen years old.

It happened on the 12th of August. He was attending a boarding-school in this city, and having just eaten a hearty dinner, climbed into a tree, from which he fell to the ground, a distance judged to be about twelve feet. He struck upon level ground, with his face downwards. He made an effort to break the fall with the hands, by which one of his wrists was dislocated and the other injured.

He was taken up unconscious, but recovered immediately. Dr. O. saw him about one hour after the fall. He was found lying upon the back, with the knees drawn up, and the hands, notwithstanding the injury at the wrists, crowded under the middle of the back. He was perfectly conscious, pupils dilated, face pale, skin warm, pulse not strong but very good. He complained of great pain and distress in the epigastrium. There were frequent attempts at vomiting, which only resulted in bringing up small quantities of his recent meal. There was also occasional hiccough. The reporter gave a small dose of morphine, with a little brandy. On visiting him again, four hours later, it was found that his attempts at vomiting had been repeated at intervals. He had twice, at his request, been placed upon the closet-stool, and had each time some motion from the bowels, passing also some urine. He had called for, and drank, large quantities of cold water. His position was the same, except that the hands were not under the back. Mind clear, pupils dilated, extremities moist and cold; no pulse at the wrist. The abdomen was painful and tender all over, and much distended. It was clear that death was rapidly approaching. He died in about three hours more, or in less than nine hours from the fall. The mind remained clear until a short time before death, which was easy.

On opening the abdomen the following day, between two and three quarts of yellowish fluid was found, in which was floating the undigested food of the last meal. The contents of the stomach had escaped through a rupture two inches in length, situated upon the anterior surface and very near the pyloric extremity.

Injury to the Odontoid Articulation followed by Exostosis.—The specimen exhibited was taken from a man about 58 years of age, who received an injury about seven years ago by a man falling from a great height and striking upon his head while he was standing. The injury produced some paralysis of the body at the time, and though recovering so as to walk imperfectly, he remained an invalid ever after, and finally died in July last from disease of the kidneys and bladder. The patient was not at first under the care of any physician. An exostosis was found upon the anterior and articulating surface of the odontoid process, of the thickness of the eighth of an inch, and extending above the process, thus elongating it nearly one fourth of an inch. A corresponding exostosis of nearly the same thickness was thrown out from the surface of the atlas where it articulated with the odontoid.

The motion of the articulation was preserved. The ligaments of the articulation were much thickened. The elongation of the process encroached upon the spinal marrow, greatly deranging its functions during the latter part of his life.

THE BOSTON MEDICAL AND SURGICAL JOURNAL.

BOSTON: THURSDAY, OCTOBER 5, 1865.

THIRD ANNUAL MEETING OF THE OPHTHALMOLOGICAL SOCIETY AT HEIDELBERG.—Through the kindness of our friend Dr. Hasket Derby, we are enabled to present to our readers this week the first account which has reached America of the recent meeting of the most distinguished oculists of Europe, in Heidelberg. Dr. Derby visited Europe purposefully to attend this congress, and it is gratifying to know that our country was so well represented in it, both by him and by Dr. Agnew, of New York. In no department of our art has there been so much earnest work done within the last ten years as by our students in modern ophthalmological science, and in Boston particularly several of the most gifted young men in the profession have devoted themselves exclusively to its study under the most eminent of its founders and masters. The fruit of this zeal cannot fail to be the foundation of an American school of ophthalmic surgery second to none in the world.

Our readers in this vicinity will be pleased to hear that our correspondent has enjoyed his short vacation, and is already upon his return voyage.

HEIDELBERG, Sept. 7th, 1865.

DEAR W.,—The third annual session of this Society has just come to a close. It may be well to preface a brief account of its proceedings by relating the circumstances of its origin.

These were simply as follows. It had long been a habit of Prof. von Graefe to spend a few days of his summer vacation at Heidelberg, and, for the convenience of a few of his personal friends and favorite pupils, to specify in advance the time of his coming. Short, informal meetings were held, and opinions freely interchanged on the prominent ophthalmological topics of the day. Gradually the number and reputation of those attending these annual gatherings increased to such an extent as to render it desirable, for the cause of science, that a definite organization should be effected, and the proceedings of each year properly collected and published. Thus the Ophthalmological Society came into existence. The sessions are held annually in this town, and last from two to three days. Any physician or man of science who is especially interested in this branch of medicine, is eligible for membership if proposed by two members. It at present consists chiefly of Germans, with a few French and English, and this year three Americans were added to its numbers. A stenographic report of its proceedings is published as soon as may be after each annual session.

The number and importance of the communications presented on this occasion render it possible to give little more than a catalogue of all and an abstract of a few.

First Day, Sept. 4th.—Prof. ARLT, as the oldest member of the standing committee, called the meeting to order. About fifty members were present. The meeting was organized by the choice of Prof. Horner, of Zurich, as President.

Prof. von GRAEFE made the first communication, taking for his subject the modified linear extraction of cataract. The principle being now conceded that the cataracts of middle and mature age can be removed bodily from the eye, with a greater chance of success than if they are pushed back into its interior, or broken up and left to absorb *in situ*, various attempts have been made to substitute other and yet safer methods to the ordinary flap extraction. At the last meeting Mr. Critchett had proposed an operation which had since been extensively practised, and which was undeniably superior to any scoop operation hitherto devised, inasmuch as a larger opening was made, and a better extracting instrument employed than the scoop of Waddan, then in common use. In order to test the comparative advantages of this method, as compared with the ordinary flap extraction, von Graefe had operated during the past year on 118 cases according to the plan of Critchett.

Of these, 7 lost the eye; 4 retained perception of light; 30 required secondary operations, such as the removal of capsule or iridectomy; 77 gave satisfactory results (vision of at least $\frac{1}{2}$).

In flap extraction, of 100 cases, in 7 the eye is lost; in 13 secondary operations are required; in 80 the result is good. Indeed, since the use of the compressed bandage even more satisfactory results are obtained, 82 cases in 100 doing well.

Comparing these results, it will be seen that in about the same percentage of cases the eye is lost, while corneal opacities and papillary closures are more common after the operation of Critchett. While, therefore, von Graefe would not accept this as a substitute for the ordinary extraction, he would employ it in cases of Morgagnian cataracts, in unripe cataracts which very slowly advance, and in cases where the chances of the healing of the corneal flap are not good. The great advantage of flap extraction consists in the readiness with which the cortical masses, which remain behind after the exit of the nucleus of the lens, can be removed. The objection to it lies in the large and gaping corneal wound; and he had a method to propose which he thought would render it possible to completely remove the lens through a small wound, thus uniting the advantages of the linear and flap procedures.

The first instrument is a long and very slender and narrow knife, which is introduced through the sclera $\frac{1}{2}$ " from a point in the upper and outer periphery of the cornea, carried across the anterior chamber and brought out at a point on the other side. The cut is now completed in the sclera, and a small conjunctival flap is formed. Thus the anterior chamber is opened at its upper edge, no portion of the cut being in the corneal substance proper. A shorter "wound-canal" is secured and a lower inner edge than if a lance-knife had been used. A portion of the iris is then removed in the ordinary manner. Next, the capsule is lacerated with a sharp hook. If, now, the lens be soft, it can readily be made to escape by pressing at the edge of the wound; if large and hard, however, a blunt hook is passed behind it to assist its egress. This hook is constructed for the purpose, and its use constitutes a distinctive feature of the operation. It is more easily withdrawn than the scoop, and the lens is removed by traction rather than by prying, the latter manœuvre being particularly dangerous.

Von Graefe has only performed this operation in 69 cases, too small a number from which to collect statistical results of any value. None of these were lost. In 5 cases iritis ensued; in the remaining 64 the result was entirely satisfactory, vision being generally at least $\frac{1}{2}$, and some of the patients being able to read small type. The great advantage of this method over Critchett's consists in the superior certainty of a favorable result and of no complication attending the healing process. On the other hand, there is more apt to be a loss of vitreous. As compared with ordinary extraction, there is the disadvantage of an artificial pupil, though as this is made upwards the least possible derangement of excentric vision takes place.

On the whole, then, we are justified in pronouncing this method superior to that of Mr. Critchett. Time alone will show whether it is to take the place of ordinary extraction.

[This communication was received with much applause.]

In answer to a question, Von Graefe remarked that he had never seen the form of cystoid cicatrix occur after this, that sometimes followed operations for glaucoma.

Dr. PAGENSTECHER, of Wiesbaden, read a paper on the simultaneous extraction of lens and capsule. He had been led to devise this operation from the fact that the presence of capsule and lenticular substance after extractions was so fertile a cause of inflammatory complications. His plan was as follows. The patient being placed under the full influence of chloroform, the ordinary cut for extraction is made with the usual knife, in the sclera, however, instead of in the cornea. A broad iridectomy is next made, downwards and outwards. If any posterior synechia exist they are detached, after which a scoop is passed through the zonula (which, if necessary, is torn through with a hook), carried back of the lens and used to bring this out. If the state of anaesthesia has remained profound, little or no vitreous is commonly lost.

The healing process goes on well. Out of 54 times that the operation has been performed, the cornea suppurated in but two cases. Out of 38 patients who have thus been operated on this year, 30 were able to read Jaeger No. 5.

In the discussion which followed, Prof. Arlt thought the operation particularly indicated in those cases where the cataract was over-ripe, for there the zonula would be found looser. He mentioned, however, serious objections to its general execution, particularly in cases of large and soft cortical masses surrounding a small nucleus, the whole enclosed in a transparent capsule.

Dr. IVANOFF read the account and exhibited microscopical drawings of a case of retinitis.

M. JAVAL exhibited an apparatus for the instant determination of astigmatism, both as regards direction and amount. Whereas a case at all complicated often requires an examination of more than an hour, it was shown that this apparatus would settle the question with greater accuracy and in a very short time. It might also be used as an optometer. Interesting statements were also made as to the first observations made on the subject of astigmatism among the French.

In connection with this, von Graefe spoke of the frequent necessity of using cylindrical glasses, met with among persons who had been operated on for cataract, and who had previously shown no signs of

astigmatism. It is as if there had been a double astigmatism, and that of the cornea had been corrected by that of the lens. An interesting discussion ensued on the worth of optometers in general in comparison with the ordinary methods of determining the far and near point. In opposition to M. Javal, it was maintained by Von Graefe that the age of a person gave no accurate idea of the glass that person needed for near objects, and that the only way of determining this important point was to settle the distance required, and then, by finding out what convex and concave glasses could be overcome in this distance, to ascertain the amount of relative accommodation.

Dr. KNAPP, of Heidelberg, alluded to the difficulty often experienced in operations for strabismus, particularly divergent strabismus, from the slight amount gained after each operation, and the necessity of a frequent repetition. He would avoid this, and secure a greater effect each time by drawing the eye over to the side of the antagonist of the divided muscle by means of a suture passed from the conjunctiva at the edge of the cornea to the commissure of that side. Thus if the case be a strongly marked strabismus divergens, and the rectus externus have been divided, a suture is passed through the conjunctiva on the inner edge of the cornea and the internal commissure, and the eye drawn inwards. At the end of twenty-four hours the suture is removed. In this manner it is possible to gain as much as 3" at a single operation. This method is also perfectly applicable to cases of strabismus with impaired action of the antagonistic muscle, where it is necessary not only to divide the former but to bring forward the latter, and would then form the last step in the operation.

Dr. DON, of Vevey, exhibited a small but extremely ingenious instrument for the purpose of determining and indicating the amount of intra-ocular tension.

Second Day, Sept. 5th. (Presidency of Prof. ARLT.) M. GIRARD-TEULON, of Paris, gave a long and interesting discourse on the mechanism of accommodation and the influence on it of the membrana limitans. This elastic membrane, he endeavored by diagrams and microscopical preparations to prove, did not terminate at the periphery of the crystalline, but passed over its anterior face and was in fact separable from the anterior capsule. Its possible influence on accommodation was elaborately developed.

Dr. LEBER, of Paris, gave the results of his investigations on the nutrition of the cornea. He alluded to the views of Recklinghausen on the microscopical anatomy of the same, and deduced from his own investigations that the cornea is penetrated by a system of canals, lined with independent membrane and connected with the lymphatic system.

Dr. TESTELIN, of Lille, related five cases of impaired vision from blows on the eye, without corresponding ophthalmoscopic symptoms.

1st.—A severe blow had been received over the eye. Only a limited portion of the retina retained its functions, the remainder having lost perception of light. No external or internal change was visible.

2d.—The same cause. The pupil was dilated and immovable; vision greatly impaired. The interior of the eye appeared normal. Three months later marked atrophy of the papilla was found to exist.

3d.—Immediately after pressure on one eye every thing appeared to be seen through a red mist. A month afterwards Jaeger, No. 20,

could be made out, only, however, with the inner portion of the field of vision. Later there was less vision. No objective change.

4th.—A stone had been thrown against the eye. The case was seen three months after the accident. The pupil was so far dilated that hardly a trace of the iris was visible. No perception of light. The ophthalmoscope revealed nothing.

5th.—The eye had been struck by a cricket ball. Vision was much impaired; the pupil dilated and sluggish. On ophthalmoscopic examination in the inverted image, a small prominence, like a pea, was seen above and to the inside of the papilla. In a month this projection had disappeared, leaving a simple spot. Vision had very slightly improved.

Von Graefe had seen such cases, and admitted them to be very difficult of explanation. He thought, however, that analogous paralyses of the motor nerves might be adduced, that, for example, where the arm becomes temporarily paralyzed from resting the head on it in sleep. Perhaps the sudden shock caused some change either in the molecular system, or in the walls or calibre of the vessels.

Dr. NAGEL read a paper on double vision and double images.

Dr. ALFRED GRAEFE alluded to the local use of caustics in cases of ophthalmia neonatorum. An objection had been made to the use of nitrate of silver on the ground that after this agent had been employed it had been found that corneal infiltrations were more frequent, and that these infiltrations often led to perforating ulcers. Some physicians had even gone so far as to give up this agent, admitting its beneficial influence on the disease, but fearing a disastrous effect on the cornea. He himself, however, had ascertained to his own satisfaction that such corneal complications only arose in those cases where the original touching had been too strong, and where, at the end of twenty-four hours, the eschar was not yet detached. He was therefore unable to sympathize with those who were unwilling to use this agent.

Dr. KNAPP, of Heidelberg, exhibited several orbital tumors, as also a choroidal sarcoma.

Dr. AGNEW, of New York, described an original operation for the purpose of removing membraniform obstructions from the pupil. The patient having been first brought under the full influence of ether or chloroform, a Bowman's needle is passed through the cornea, about $\frac{1}{4}$ a line from its inner edge, and made to penetrate the membrane. With a cataract- or lance-knife a small wound is next made $\frac{1}{4}$ from the outer corneal edge, care being taken to evacuate as little as possible of the aqueous humor. Through this last wound a small and sharp hook is now passed into the anterior chamber, engaged in the capsule at the point where it has been penetrated by the needle, and made to lacerate it. If the membrane is tough it is wrapped round the hook by rotating its handle, and then withdrawn; if fragile, the pupil is simply opened. This operation is also applicable to cases of closed pupil, where masses of exudation have collected behind the iris, the needle offering a fixed point from which traction can be made with comparative safety.

[This operation created much interest. It was twice successfully performed by Dr. Agnew in the presence of the leading members of the Society.]

Prof. von GRAEFE exhibited a reading glass for the use of amblyopic patients. It consists of two convex glasses set in a short cylinder, and unites the double advantage of a large field and slight spherical aberration. Also a binocular "measurer of refraction," resembling an opera glass, and similar to the monocular instrument of his already in use. The great advantage gained by using both eyes at the same time in the determination of the far-point is readily imaginable.

Dr. LURIEJO, of Lisbon, read a paper on tobacco-amaurosis.

The session was closed by a brief address from Prof. Arlt, who adjourned the Society for two years, and invited the members to be present at the third International Ophthalmological Congress, to take place on August 27th, 1866, in Vienna.

An informal, social gathering in the evening was numerously attended by members and their wives. And it would be unjust to close this brief and very incomplete abstract of the two sessions without acknowledging the very remarkable courtesy and kindness with which the Americans present were received by their European brethren. To Dr. Roeder, of Heidelberg, special acknowledgments are most justly due.

Yours,

HASKET DERBY.

DR. C. E. BROWN-SEQUARD.—We regret to learn that the Medical Faculty of Harvard University have received, by the last steamer, a letter from this gentleman, announcing his inability to deliver, at the Medical College, during the coming winter, the course of lectures which he had contemplated. In the letter alluded to, Dr. Brown-Sé-
quard states that after packing his furniture and engaging his passage for this country, he was attacked by a return of symptoms under which he had previously labored, and that he is in consequence compelled to desist for the time and in a great measure from active mental labor. While we regret this loss to the Faculty and to the cause of education, we venture to express a hope that the illness of Dr. Brown-Sé-
quard may not be of long duration, and that at no remote period both the College and the public may be able to avail themselves of his valuable experience and distinguished scientific services.

VITAL STATISTICS OF BOSTON.

FOR THE WEEK ENDING SATURDAY, SEPTEMBER 30th, 1865.

DEATHS.

	Males.	Females.	Total.
Deaths during the week	49	45	94
Ave. mortality of corresponding weeks for ten years, 1853-1863	49.5	43.1	92.6
Average corrected to increased population	00	00	101.00
Death of persons above 90			

DEATHS IN BOSTON for the week ending Saturday noon, September 30th, 94. Males, 49—Females 45. Abscess, 1—anaemia, 2—apoplexy, 2—congestion of the brain, 1—disease of the brain, 2—cancer, 3—cholera infantum, 11—consumption, 13—convulsions, 1—diarrhoea, 5—dropsy of the brain, 1—dysentery, 7—erysipelas, 1—typhoid fever, 7—typhus fever, 1—disease of the heart, 2—infantile disease, 3—intemperance, 2—disease of the kidneys, 1—lead disease, 1—congestion of the lungs, 1—marasmus, 4—old age, 1—paralysis, 1—peritonitis, 2—pleurisy, 1—premature birth, 2—prostatitis, 1—puerperal disease, 1—suicide, 1—syphilis, 1—teething, 2—unknown, 8—whooping cough, 1.

Under 5 years of age, 42—between 5 and 20 years, 8—between 20 and 40 years, 18—between 40 and 60 years, 13—above 60 years, 13. Born in the United States, 63—Ireland, 23—other places, 8.